Scottish National Point Prevalence Survey of Healthcare Associated Infection and Antimicrobial Prescribing in Long Term Care Facilities, 2017

Frequently Asked Questions
April 2018 Version 1.0

1 Overview

1.1 What is a Healthcare Associated Infection (HCAI)?

Healthcare associated infections (HCAI) can develop either as a direct result of healthcare interventions such as medical or surgical treatment, or from being in contact with a healthcare setting. In this survey, a HCAI was defined as any infection that occurs two days or more after admission to the current long term care facility (LTCF) or present on admission originating in another healthcare facility (hospital or another care home), or is associated with a device or surgical procedure. A prevalent HCAI is one where the resident has symptoms of an active HCAI or is being treated for a HCAI on the day of the survey.

1.2 What is antimicrobial resistance and why is it important?

Bacteria can gain antimicrobial resistance (AMR) meaning that they are no longer killed by antimicrobials. Bacteria may be sensitive to all antimicrobials (i.e. not AMR), resistant to just one antimicrobial or antimicrobial class, they may be multi-drug resistant meaning that they are resistant to multiple antimicrobials, or pan-drug resistant if resistant to all drug classes. AMR is important when trying to treat residents effectively. If treating a resident with an antimicrobial that the infecting bacteria is resistant to, then the treatment will fail. Antimicrobial stewardship and prudent use of antimicrobials will contain AMR and conserve the utility of antimicrobials.

1.3 What is a prevalence survey?

A prevalence survey is a count of the number of residents with HCAI or receiving antimicrobials at a particular time as a proportion of the total number of residents who were surveyed in the LTCF. This survey gives a snapshot picture of the number of residents with HCAI or receiving antimicrobials in Scottish LTCF. The report contains

information on the prevalence of HCAI and antimicrobial prescribing for individual LTCF at the time of survey only, and not for all times.

1.4 Why was this survey undertaken?

It is important to know the prevalence of HCAI and antimicrobial prescribing in Scottish LTCF to allow the government, Care Inspectorate and local LTCF to plan effective ways to reduce HCAI and prescribing. With this information both national and local infection control plans can be targeted most effectively.

1.5 Who undertook the survey?

Health Protection Scotland (HPS) undertook the survey. HPS trained local LTCF staff in volunteer LTCF to collect data. Local data collection teams included nurses and nursing/care assistants. HPS is indebted to the data collection staff and participating LTCF. Their contribution is gratefully acknowledged.

1.6 When was the survey undertaken?

LTCF were surveyed in October 2017.

1.7 Where was the survey undertaken?

The survey was undertaken in 52 volunteer LTCF. This represents 6.0% of all Scottish LTCF where the main client group is described as older persons (n=866). All LTCF registered with the Care Inspectorate as providing elderly care were invited to participate.

1.8 Which residents were surveyed?

Information was collected on all eligible residents in the surveyed LTCF. Residents were eligible for inclusion in the survey if they were living full-time (24 hours a day) in the LTCF AND were present in the LTCF at 8:00 AM on the day of the survey AND were not discharged from the LTCF at the time of the survey AND had given consent for their information to be recorded in the survey. Respite residents and residents temporarily outside the LTCF (e.g. at an outpatients appointment or with family) were included if they met the other criteria. Residents who had been discharged from the LTCF and admitted to hospital at the time of survey were excluded.

1.9 What were the objectives of the survey?

The objectives of the 2017 LTCF PPS were to:

1. measure the prevalence of HCAI and to describe the types of HCAI occurring in LTCF
2. measure the prevalence of antimicrobial use and describe the types of antimicrobials prescribed
3. describe the organisation of infection prevention and control (IPC) and antimicrobial stewardship programmes
4. identify priority areas for interventions to prevent and control HCAI and improve antimicrobial prescribing
5. identify priority areas for training and/or additional IPC and antimicrobial stewardship resources
6. contribute to the European Centre for Disease Prevention and Control (ECDC) Europe-wide HALT-3 study.

1.10 Were these objectives met?

Yes, the report contains detailed discussion on each of these topics. The scientific objectives (1-5) are addressed in this report. The remaining objective has been met and the results from the Scottish survey will now inform the European strategy.

1.11 What does the report tell us?

The final report describes the resident population in terms of risk factors for HCAI and indicators of additional need (e.g. age, sex, mobility, continence, disorientation, pressure sores and other wounds, and invasive device such as catheters). It gives an estimate of how many residents in Scottish LTCF have a HCAI on any one day in Scotland and what type of HCAI those residents have. It also reports the prevalence of antimicrobial prescribing; describes which antimicrobials are being prescribed and for which diagnoses and indications. LTCF IPC and antimicrobial stewardship indicators are also described.

1.12 What does the report not tell us?

The report does not provide details of how a resident acquired their HCAI and does not report on the cleanliness of the LTCF.

1.13 How was ECDC involved?

The European Centre for Disease Prevention and Control (ECDC) initiated a third Europe-wide PPS of HCAI and antimicrobial prescribing in LTCF. This survey was known as HALT-3 and took place across participating European counties in 2016 and 2017. The 2017 Scottish survey feeds into ECDC's HALT-3 survey and results will be combined to give Europe-wide results.

ECDC provided training to country representatives which involved staff at HPS, training materials for cascading training to data collectors in Scotland, a standardised protocol with standard case definitions, data collection questionnaires and software, and support throughout the data collection period.

The ECDC protocol was modified slightly to maximise its use in Scotland.

2 Methodology of Survey

2.1 How many residents were included in the survey?

A total of 2147 residents in 52 LTCF were included in the survey.

2.2 How is prevalence calculated?

HCAI prevalence was calculated by dividing the total number of residents diagnosed with a HCAI by the total number of residents (excluding those with unknown HCAI status).

Antimicrobial prescribing prevalence was calculated by dividing the total number of residents receiving antimicrobials by the total number of residents (excluding those with unknown antimicrobial status).

2.3 What definitions of HCAI were used?

The European Centre for Disease Control and Prevention (ECDC) has defined specific types of infection for use in surveillance. These definitions are internationally recognised as standard definitions for HCAI types and these were used in this survey.

2.4 What types of HCAI were included in the survey?

This survey included HCAI defined by ECDC. HCAI were grouped into nine broad categories by ECDC based on the main physiological systems and surgical interventions. These included:

- Eye, ear, nose and mouth infection
- Gastrointestinal tract infection
- Bloodstream infections
- Respiratory tract infection
- Skin and soft tissue
- Surgical site infection
- Urinary tract infection
- Unexplained febrile episode
- Other infections

2.5 How was the study designed?

The ECDC protocol for HALT studies in Europe was used and adapted for use in Scotland. HPS added further detail and data fields to this protocol to ensure maximum usability in Scotland.

2.6 How were the data collected?

A team of data collectors were trained to identify HCAI in residents based on signs and symptoms recorded in the resident notes and discussion with staff giving care to the resident. The information was recorded on data collection forms designed for the survey. Specific case definitions for HCAI were used. Other information on prescribed antimicrobials and resident characteristics was also recorded. All data collectors were trained by HPS, using the ECDC course, prior to collecting the data.

Information was extracted from resident notes, care plans and drug charts and if anything was unclear from the notes, data collectors clarified with a member of staff. Data collection forms were sent to HPS where the data was entered into software designed for the survey. Data were then verified and analysed.

Prior to the data collection period, HPS carried out a Privacy Impact Assessment (PIA) and the project was reviewed and approved by the Public Benefit and Privacy Panel for Health and Social Care (PBPP). Resident information was protected according to the Data Protection Act.

2.7 What is the difference between number of infections and number of residents with HCAI?

Some residents were found to have more than one HCAI. Prevalence was calculated using the number of residents with infections compared to the total number of residents included in the survey (excluding those with unknown HCAI status). In some instances within the report the total number of infections is reported, this number is always greater than the total number of residents who have HCAI. It is important to consider the total number of infections because this gives a clearer picture of what types of HCAI residents have.

2.8 What is the difference between colonisation and infection and what implications did this have for the survey?

A resident may have an organism living on or in their body without any clinical signs or symptoms of disease. These residents are colonised with the organism. An infection occurs when the organism enters the body and causes disease through, for example, a wound in the skin.

The survey collected information on residents that showed clinical signs and symptoms of infection (i.e. those that were symptomatic) and not those that were colonised with an organism (i.e. those that were asymptomatic).

3 Results

3.1 What is the overall prevalence of HCAI and antimicrobial prescribing in Scottish LTCF?

The overall prevalence of HCAI in surveyed LTCF for the elderly was 5.9%.

The overall prevalence of systemic antimicrobial prescribing in surveyed LTCF for the elderly was 6.5%.

3.2 Does a prevalence of 5.9% mean that if I am a resident in a LTCF, I have a one in seventeen chance of getting a HCAI?

No. This means that at any time one in seventeen residents in LTCF will have a HCAI. A prevalence survey counts the number of residents with HCAI at any point in time.

3.3 Can you tell me what my chance is of contracting HCAI if I am a LTCF resident?

No. This is not shown by the current prevalence survey. In order to calculate how likely a person is to get a HCAI an incidence study would be required. This would look at all residents within the LTCF on a regular basis over a defined time period.

3.4 What are the most common types of infections?

The most common infection type was lower respiratory tract infections (LRTI) other than common cold syndromes, pharyngitis, influenza and pneumonia, comprising 31.0% of all HCAI.

Collectively, respiratory tract infections (RTI) was the most prevalent HCAI group comprising nearly two fifths of all HCAI (38.1%). Urinary tract infections (UTI) was the second most prevalent infection group accounting for a third of all HCAI (31.0%). Approximately half of UTI were confirmed by microbiology and the remainder were “probable” UTI. Skin and soft tissue infections (SSTI) was the third most prevalent HCAI group comprising 23.0% of all HCAI. There were no gastrointestinal infections or bloodstream infections recorded.

3.5 What are the most serious types of infection?

HCAI is a term for a group of conditions. The name tells us that it is an infection relating to healthcare received but it doesn’t give any details about severity of infection. Some HCAI be treated easily and while they can be unpleasant they do not have a lasting impact on a resident’s health. Some of these infections, if they remain untreated can progress to more serious conditions. Other types of HCAI initially have a very serious effect on a resident’s health, increasing risk of hospitalisations, requiring further surgery, prolonged treatment with antibiotics and considerable distress to the resident e.g. surgical site infections.

3.6 Why do some LTCF have higher prevalence than others?

Some LTCF will have a higher prevalence of HCAI due to a number of factors including resident age, case severity and type of care given in LTCF, reflecting differing resident vulnerability to infection. Unadjusted LTCF prevalence should not be compared as the LTCF in question may have an extraordinary number of high risk residents within its care. In addition, as this is a prevalence survey taking place at one specific point in time, it might not represent the prevalence at other times.

3.7 What does the survey tell us about the characteristics of LTCF residents?

The results show that, of all surveyed residents, the median age was 84 years with 94.0% and 43.9% of residents over the age of 65 and 85 years, respectively. Two thirds of the residents were female.

Approximately 70% of surveyed residents were disorientated in time or space on the day of the survey, approximately two thirds were incontinent for urine and/or faeces, and about half of residents were non-ambulant and either required a wheelchair or were bedridden. These characteristics are indicators of relative need, as a measure of an individual's functional needs and/or their degree of dependence with specific reference to older people in the community.

Furthermore, approximately one in 12 residents had a urinary catheter in situ at the time of survey and approximately one in 12 had been admitted to hospital in the last three months. Pressure sores of any grade were recorded for 3.5% of residents and any wounds other than pressure sores were recorded for 7.2% of residents. One in ten residents had a pressure sore, other wound, or both (10.0%). Vascular catheterisation and surgery in the last 30 days prior to the survey were both uncommon (0.1% and 0.3%, respectively). These characteristics are risk factors for infection.

3.8 Where all antimicrobials prescribed to treat infections?

No, approximately four fifths (78.9%) of antimicrobials prescribed in surveyed LTCF were prescribed to treat infections, most commonly respiratory tract infections (42.3%), urinary tract infections (34.6%) and skin and soft tissue infections (19.2%). One fifth (21.1%) of antimicrobials prescribed in surveyed LTCF were prescribed to prevent infections, and 85.7% of these antimicrobials were prescribed to prevent urinary tract infections.

4 Discussion

4.1 Is there any evidence to show that HCAI or antimicrobial prescribing is rising or falling?

This is the second PPS of HCAI and antimicrobial prescribing in Scottish LTCF. The first survey was carried out in 2010. The prevalence of HCAI in Scottish LTCF in 2017 was 5.9% (95% CI: 5.0 to 7.0) versus 2.6% (95% CI: 2.2 to 3.1) in the 2010 PPS. The prevalence of systemic antimicrobial prescribing in 2017 was 6.5% (95% CI: 5.6 to 7.7) which is similar to the prevalence reported in the 2010 survey (7.3%, 95% CI: 6.6 to 8.1).

However, no formal statistical comparisons were conducted on these prevalences (i.e. to check if they were statistically higher / lower). This is because the two studies were not directly comparable due to differences in the protocol including case definitions for infection, the types of LTCF included in the surveys and the time of year in which the survey was

undertaken (July and August 2010). In addition, the 2017 survey protocol included an imported infection case definition to include infections that were healthcare associated but not associated with the current LTCF; in 2017 this accounted for three HCAI that originated in a hospital rather than in the current LTCF.

When reviewing prevalence over time it is important to consider a number of factors before making any comparisons.

- The structure and function of LTCF has changed over time
- There is more focus on treating residents 'at home' and therefore more complex precedures are taking place in the LTCF setting
- The underlying health and demographics of the population is not constant
- New therapies will increase the life expectancy of very ill residents who are more susceptible to infection
- The age of residents is increasing with time since people are living for longer

4.2 Can the results be directly compared to the rest of Europe and the UK?

Comparisons of the results of prevalence surveys undertaken in different locations or in the same location at different times are difficult. In the published literature, case definitions vary. Additionally, the prevalence of HCAI is dependent on a number of factors that reflect differing resident vulnerability to infection, differences in the structure and function of LTCF across Europe, and differences in management policies and practices at the time of the survey.

Comparison of the results of the large number of prevalence surveys that have been published is therefore difficult. These studies have been undertaken in different countries, at different times, using different case definitions and data collection methods. Often important details of the methods used are unavailable. Personnel collecting the data can vary between surveys and it is often not clear how well data collectors have been trained. In addition, age and sex distribution, length of stay, case mix and underlying health of the population vary greatly across Europe. This limits the comparability of results from different surveys.
To make any sort of comparisons, data must be adjusted for these differences and a number of caveats acknowledged.

4.3 How do the results compare to recent studies in the UK and Europe?

A second Europe-wide HALT survey (HALT-2) was undertaken in Europe in 2013 however Scotland was unable to participate in this. The Europe-wide prevalence was reported as 3.4%. England, Northern Ireland and Wales participated and the prevalence of HCAI was reported to be 6.8%, 5.8% and 3.8%, respectively. Whilst the results from these surveys are also not comparable due to differences in the protocol, these estimates are in line with the prevalence of HCAI measured here in the 2017 Scottish survey. Whilst the protocol, case definitions and population included in this survey also differ from those used in the 2016 Scottish hospital PPS, the burden was in line with that reported in adult inpatients in Scottish acute hospitals (4.6%, 95% CI: 4.1 to 5.1).

The prevalence of antimicrobial prescribing in the 2013 Europe-wide HALT-2 survey was 4.4%. England, Northern Ireland and Wales participated and the prevalence of prescribing was reported as 9.0%, 10.6% and 7.5%, respectively. In the 2017 Scottish survey, less than a quarter of antimicrobials were prescribed for the prevention of infection (i.e. prophylaxis,

21.9%). This is similar to that reported in the 2013 European HALT-2 survey (27.2%) but less than that reported in Northern Ireland where more than half of the antimicrobials prescribed were given for prevention rather than treatment (53.3%); this was the highest in Europe. In addition, any differences may also reflect differences in included resident population, LTCF structure and type of care given.

4.4 What does the survey tell us about organisms which cause infection (e.g. MRSA, *C. difficile* and *Enterobacteriaceae*)?

Microorganism data were only available for two HCAI. This information is usually held within GP records and not in resident notes at the LTCF. If a test result is positive, then the GP will usually contact the LTCF or send a prescription directly to the pharmacy and medications to treat an infection will be delivered to the LTCF. Whilst this might be suitable for management of the individual resident's care, it does not provide insight into the epidemiology of organisms. This could be particularly important when managing residents colonised or infected with multidrug resistant organisms (MDRO). In addition, the lack of specific microbiological data may have affected the completeness and accuracy of a HCAI diagnosis.

4.5 Where does the work go from here?

This is the first PPS in this setting in Scotland since 2010 and the results provide an evidence base pertaining to the epidemiology of HCAI, indicators of infection prevention and control and antimicrobial prescribing practices specific to this setting. This evidence can be used to inform the development of interventions to reduce HCAI and improve antimicrobial prescribing at both local care home and national level.

These data should be considered by the Scottish AMR and HAI Strategy Group (SARHAI) and the Care Inspectorate in order to inform future policy priorities and activity using intelligence on the current epidemiology of HCAI, antimicrobial prescribing and IPC indicators in LTCF.

Several recommendations for priority areas for IPC quality improvement, surveillance activities and antimicrobial stewardship were made.

5 HCAI prevention and reduction of antimicrobial prescribing

5.1 What is currently being done in Scotland to reduce HCAI and antimicrobial resistance?

In 2016, the Scottish Government published its 5 Year Strategic Framework (2016-2021) to monitor and prevent HCAI and tackle antimicrobial resistance. The Strategic Framework was commissioned by the Scottish Antimicrobial and Healthcare Associated Infection (SARHAI) Strategy Group and focuses on the safety of residents, the public and healthcare staff, both in community and healthcare settings. By 2021, vision for the Strategic Framework, is:

- To prevent avoidable HCAI
- To stop spread
- To contain antimicrobial resistance

The Strategic Framework is detailed here:
http://www.gov.scot/Topics/Health/Services/Preventing-Healthcare-Infections/SARHAI5YrStrategicFramework

In 2017, HPS published an updated edition of the National Infection Prevention and Control

Manual. The manual aims to:

- Make it easy for care staff to apply effective IPC practices
- Reduce variation and optimise IPC practices throughout Scotland
- Help reduce the risk of HCAI
- Help align practice, monitoring, quality improvement and scrutiny.

The National manual is detailed here: http://www.nipcm.hps.scot.nhs.uk/

Guidance and care bundles to reduce the risk of HCAI continue to be developed, updated and implemented. The HCAI Compendium provides links to all current HCAI guidance, as well as the key messages from the guidance and all the associated supporting materials e.g. checklists, care bundles, resident information leaflets and training scenarios. Much of the information here is applicable to LTCF. The Compendium can be found here: http://www.hps.scot.nhs.uk/HCAIic/ic/resourcedetail.aspx?id=653

In 2013, the 'UK Five Year Antimicrobial Resistance Strategy, 2013 to 2018' was published which is being implemented in Scotland through a number of actions. The Antimicrobial Resistance Strategy is detailed here: https://www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018

The Scottish Antimicrobial Prescribing Group (SAPG) works closely with health boards to promote safe and effective prescribing practices and antimicrobial stewardship. SAPG is also implementing the Scottish Management of Antimicrobial Resistance Action Plan (ScotMARAP) programme. More on SAPG activities and access to 'good practice' documents is detailed here: https://www.sapg.scot/

The Scottish Reduction in Antimicrobial Prescribing (ScRAP) programme is an educational toolkit to help support a reduction in unnecessary prescribing in primary care. It was launched by NHS Education for Scotland (NES) in 2013 and updated in 2017 to include sessions on the management of UTI. This programme also promotes the SAPG decision aid and sending urine for culture rather than dipstick testing, if relevant symptoms are present, as a method of diagnosing UTI in older persons and persons with catheters.
http://www.nes.scot.nhs.uk/education-and-training/by-theme-initiative/healthcare-associated-infections/training-resources/scottish-reduction-in-antimicrobial-prescribing-(scrap).aspx

All care services in Scotland currently follow the new National Health and Social Care Standards (2017) which replaced the National Care Standards (2002), and from April 2018, the new Standards will be taken into account by the Care Inspectorate in relation to inspections. The standards highlight the right for all individuals receiving care to be treated with dignity and respect, compassion, to feel included, to receive responsive care and support, and to be supported in their wellbeing.
http://www.gov.scot/Resource/0052/00520693.pdf

5.2 What can I do as a visitor to LTCF to prevent HCAI?

If you are visiting a member of the family or a friend either in LTCF or another place of care such as a hospital, there are a number of things you can do to help prevent the spread of any infection, including winter vomiting disease (norovirus) and MRSA. Some infections such as norovirus may be brought in from the community and can spread rapidly between

residents and staff. Remember - LTCF and hospitals have many vulnerable residents and residents - your actions can affect their health.

The top tips for visitors from the Chief Medical Officer and Chief Nursing Officer are available at: http://www.gov.scot/Topics/Health/Services/Preventing-Healthcare-Infections/Infection-Monitoring/Preventing-Infection

5.3 Where can I get more information on HCAI?

Further information on HCAI and HCAI prevention can be obtained from:

Health Protection Scotland (HPS)
Telephone: 0141 300 1100
Website: http://www.hps.scot.nhs.uk/

NHS Education for Scotland
Telephone: 0141 223 1436
Website: http://www.nes.scot.nhs.uk/education-and-training/by-theme-initiative/healthcare-associated-infections.aspx